

AMENDMENTS TO THE CLAIMS

Please amend claims 30, 33-35, 37, 39, 41, 46-49 and add new claims 50-51 as follows:

Claims 1-29 (canceled)

Claim 30 (currently amended) A method for forming a ruthenium titanium nitride (RTN) pattern comprising:

(a) preparing a semiconductor substrate where a RTN thin film is formed on top of a patterned interlayer insulating layer; and

(b) performing CMP process on the RTN thin film to planarize the RTN thin film with the patterned interlayer insulating layer without causing dishing of the interlayer insulating layer using a slurry comprising ceric ammonium nitrate $[(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6]$, an abrasive and an acid wherein a weight percent of the ceric ammonium nitrate is greater than a weight percent of the acid.

Claim 31 (original) The method according to claim 30, wherein the RTN thin film is formed to function as a barrier film.

Claim 32 (original) The method according to claim 30, wherein part (b) is performed under a polishing pressure ranging from about 1 to about 4psi.

Claim 33 (currently amended) The method according to claim 30, wherein part (b) is performed by using a rotary type CMP system, and a table revolution number thereof ranges from about 10 to about 80 rpm.

Claim 34 (currently amended) The method according to claim 30, wherein part (b) is performed in a linear type CMP system where a table movement speed ranges from about 100 to about 600 ft/min.

Claim 35 (currently amended) The method according to claim 30, wherein the weight percent of the ceric ammonium nitrate is present in an amount ranging from about 1 to about 10 wt% by total weight of the slurry composition.

Claim 36 (original) The method according to claim 30, wherein the acid is selected from the group consisting of HNO₃, H₂SO₄, HCl, H₃PO₄, and mixtures thereof.

Claim 37 (currently amended) The method according to claim 36, wherein the acid is HNO₃ which is present in an amount ranging from about 1 to about 10 wt% by total weight of the slurry.

Claim 38 (original) The method according to claim 30, wherein the abrasive is selected from the group consisting of CeO₂, ZrO₂, Al₂O₃ and mixtures thereof.

Claim 39 (currently amended) The method according to claim 30, wherein the average size of the abrasive is below less than 1 μm.

Claim 40 (original) The method according to claim 30, wherein the abrasive is present in an amount ranging from about 1 to about 5 wt% by total weight of the slurry.

Claim 41 (currently amended) The method according to claim 30, wherein a pH of the slurry ranges from about 1 to about 7.

Claim 42 (original) The method according to claim 41, wherein pH of the slurry ranges from about 1 to about 3.

Claim 43 (original) The method according to claim 30, wherein the slurry further comprises a buffer solution.

Claim 44 (currently amended) The method according to claim 43, wherein the buffer solution is a mixture of an organic acid and an organic acid salt.

Claim 45 (original) The method according to claim 44, wherein the buffer solution is a mixture of acetic acid and acetic acid salt.

Claim 46 (currently amended) A method for forming a RTN pattern comprising:

(a) preparing a semiconductor substrate where a RTN thin film is formed on top of a patterned interlayer insulating layer; and

(b) performing CMP process on the RTN thin film to planarize the RTN thin film with the patterned interlayer insulating layer without causing dishing of the interlayer insulating layer using a slurry comprising

a from about 1 to about 10 wt% ceric ammonium nitrate $[(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6]$ of 1-10 wt% based on a total weight of the slurry;

an from about 1 to about 5 wt% abrasive of 1-5 wt% based on the total weight of the slurry;

an acidity regulating compound composition in such an amount so as to keep up a pH of said slurry as in a range of from about 1 to about 7, the acidity regulating composition comprises an acid present in a wt% that is less than the wt% of the ceric ammonium nitrate; and

remaining water.

Claim 47 (currently amended) The method according to claim 46, wherein the pH of the slurry ranges from about 1 to about 3.

Claim 48 (currently amended) The method according to claim 46, wherein said acidity regulating compound is composition comprises an acid.

Claim 49 (currently amended) The method according to claim 46, wherein said acidity regulating compound is composition comprises a buffer solution consisting of an organic acid and its salt.

Claim 50 (new) A method of forming a ruthenium titanium nitride (RTN) pattern comprising:

- (a) preparing a semiconductor substrate where a RTN thin film is formed; and
- (b) performing CMP process on the RTN thin film using a slurry comprising an oxidant consisting essentially of ceric ammonium nitrate $[(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6]$, an abrasive consisting essentially of inorganic particles, an acid and a buffer solution, and having pH ranging from 1 to 3.

Claim 51 (new) A method of forming a RTN pattern comprising:

- (a) preparing a semiconductor substrate where a RTN thin film is formed; and
- (b) performing CMP process on the RTN thin film using a slurry comprising a ceric ammonium nitrate $[(\text{NH}_4)_2\text{Ce}(\text{NO}_3)_6]$ of 1-10 wt% based on total weight of the slurry; an abrasive consisting essentially of inorganic particles of 1-5 wt% based on total weight of the slurry; a buffer solution consisting of an organic acid and its salt in such amount as to keep up pH of said slurry as 1 to 7; and remaining water.